METHOD AND APPARATUS FOR DESIGNING AN INTEGRATED CIRCUIT USING A MASK-PROGRAMMABLE FABRIC

ABSTRACT

One embodiment of the invention provides a system that facilitates designing an integrated circuit using a mask-programmable fabric, which contains both mask-programmable logic and a mask-programmable interconnect. During operation, the system receives a description of a mask-programmable cell, wherein instances of the mask-programmable cell are repeated to form the mask-programmable fabric. The system uses this description of the mask-programmable cell to generate a derived library containing cells that can be obtained by programming the mask-programmable cell. Next, the system receives a high-level design for the integrated circuit. The system then performs a synthesis operation on the high-level design to generate a preliminary netlist for the high-level design, wherein the preliminary netlist contains references to cells in the derived library. Finally, the system converts the preliminary netlist into a netlist that contains references to the mask-programmable cell with the logic appropriately programmed. The netlist is then placed and routed with the mask programmable constraints on the mask programmable fabric. The design, thus implemented on the programmable fabric, can be changed to accommodate logic revisions and bug fixes by changing only a few masks required for its fabrication.